Original Contribution

Prostate-Specific Antigen Test for Prostate Cancer Screening: American Society of Clinical Oncology Provisional Clinical Opinion

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Prostate cancer is the second leading cause of cancer death among American men.[1,2] Recent epidemiologic trends have shown a lower proportion of men diagnosed with advanced prostate cancer and a steady decrease in prostate cancer mortality rates, with an estimated number of deaths exceeding 30,000 deaths in 2011[3] and 28,000 in 2012.[4] Whether prostate cancer screening with prostate-specific antigen (PSA) testing is a potential explanation for these trends is uncertain. What is known, on the basis of two large and moderate quality randomized trials, is that men tested for PSA had significantly more prostate cancer detected when compared with men who did not receive PSA testing.[5,6] To date, this has resulted in a significant reduction in prostate cancer–specific mortality in one of the randomized trials,[6] but no difference in overall mortality detected in either of the trials.[5,6] There are well-known limitations associated with the randomized trials[7-9]; however, they currently represent the best evidence on the topic. Recommendations from major organizations in the United States vary widely on the topic of PSA testing for prostate cancer screening.[10-15]

The rationale for PSA testing is the detection of prostate cancer at a stage that is potentially curable. There is evidence of an approximate 20% reduction in prostate-specific mortality over time, but the extent to which PSA screening may play a role is unclear.[6] It is difficult to predict for individual men whether treatment of prostate cancer identified through screening will lead to this benefit. For many men, it will not. Approximately three out of four elevated PSA test results turn out to be false positive for prostate cancer. In one trial, approximately 167 men out of 1,000 underwent a biopsy after an elevated PSA; of those, approximately 127 did not have prostate cancer.[6] The adverse effects associated with prostate biopsies are generally manageable; however, they are on the rise, especially infection-related hospitalizations, and death is a very small but real possibility.[16,17] For those who do have prostate cancer, a large proportion will ultimately be diagnosed and treated for low-risk disease that may not have presented itself clinically during their lifetimes.

Thus, with benefit for some (lower prostate cancer–specific mortality) and harm for others (overdiagnosis, overtreatment, and adverse events), it is important for physicians and their patients to consider whether to have PSA levels tested and to determine the likely course of action if the PSA level is suspicious for prostate cancer. Options include doing nothing, checking PSA again at a certain time point, or undergoing a prostate biopsy. Men's clinician-informed choices should depend largely on their values and preferences and how they weigh the available information.

Recommendations

ASCO's PSA Testing Expert Panel based their recommendations on a systematic review of recent (March 2012) evidence on the benefits and harms of PSA-based screening. *Journal of Clinical Oncology* (*JCO*) published the Provisional Clinical Opinion (PCO) in July 2012.[18] The Bottom Line Box includes the recommendations from the PCO with permission from *JCO*.

A decision aid and PowerPoint slide set are available as Data Supplements to this article and through the ASCO Web site at www.asco.org/pco/psa.

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Accepted for publication on July 9, 2012.

THE BOTTOM LINE

PSA SCREENING FOR PROSTATE CANCER: ASCO PROVISIONAL CLINICAL OPINION

Clinical Question

- For asymptomatic men in the general population, do the benefits of PSA screening for prostate cancer outweigh the potential harms?

Population of Interest

- Asymptomatic men from the general population considering PSA-based screening for prostate cancer.

Target Audience

- Primary health care providers and asymptomatic men from the general population are the primary audience; however, it also applies to oncologists and other health care providers who treat patients for whom this PCO may apply.

Interventions and Comparisons

- As part of prostate cancer screening for asymptomatic men in the general population: PSA testing compared with no PSA testing.

Recommendations

Based on the identified evidence and the expert opinion of the panel:

- In men with a life expectancy ≤ 10 years,* it is recommended that general screening for prostate cancer with total PSA be discouraged, because harms appear to outweigh potential benefits.

Type and strength of recommendation: evidence-based, strong
Strength of evidence: Moderate, based on five randomized controlled trials (RCTs) with intermediate to high risk of bias, moderate follow-up, and limited data on subgroup populations

- In men with a life expectancy >10 years*, it is recommended that physicians discuss with their patients whether PSA testing for prostate cancer screening is appropriate for them. PSA testing may save lives but is associated with harms, including complications, from unnecessary biopsy, surgery, or radiation treatment.

Type and strength of recommendation: evidence-based, strong
Strength of evidence: for benefit, moderate; for harm, strong; based on five five RCTs (and several cohort studies) with intermediate to high risk of bias, moderate follow-up, indirect data, inconsistent results, and limited data on subgroup populations

- It is recommended that information written in lay language be available to clinicians and their patients to facilitate the discussion of the benefits and harms associated with PSA testing prior to the routine ordering of a PSA test.

Type and strength of recommendation: Informal consensus, strong
Strength of evidence: Indeterminate. Evidence was not systematically reviewed to inform this recommendation; however, randomized trials are available on the topic

*** Calculation of life expectancy is based on a variety of individual factors and circumstances. A number of life expectancy calculators (eg, http://www.socialsecurity.gov/OACT/population/longevity.html) are available in the public domain; however, ASCO does not endorse any one calculator over another.**

Authors' Disclosures of Potential Conflicts of Interest

Although all authors completed the disclosure declaration, the following author(s) and/or an author's immediate family member(s) indicated a financial or other interest that is relevant to the subject matter under consideration in this article. Certain relationships marked with a "U" are those for which no compensation was received; those relationships marked with a "C" were compensated. For a detailed description of the disclosure categories, or for more information about ASCO's conflict of interest policy, please refer to the Author Disclosure Declaration and the Disclosures of Potential Conflicts of Interest section in Information for Contributors.

Employment or Leadership Position: None **Consultant or Advisory Role:** None **Stock Ownership:** None **Honoraria:** None **Research Funding:** Ian Thompson, National cancer institute **Expert Testimony:** None **Other Remuneration:** Andrew J Vickers, Patent application for a statistical method to detect prostate cancer

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DOI: 10.1200/JOP.2012.000715

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